

CLAIMS

What is claimed is:

1. A fiber, tape or film comprising (a) a segmented thermoplastic, elastomeric polymer, and (b) an uncrosslinked olefinic thermoplastic, elastomeric polymer, wherein the olefinic thermoplastic, elastomeric polymer is dispersed in a matrix of the segmented thermoplastic, elastomeric polymer.
5
2. A fiber, tape or film according to Claim 1 wherein the segmented thermoplastic, elastomeric polymer is selected from the group consisting of poly(ether ester), poly(ester ester), poly(ester amide), and poly(ether amide).
10
3. A fiber, tape or film according to Claim 1 wherein the segmented thermoplastic, elastomeric polymer is poly(ether ester).
15
4. A fiber, tape or film according to Claim 2 wherein the poly(ether ester) comprises polybutyleneterephthalate and polytetramethyleneoxide.
15
5. A fiber, tape or film according to Claim 4 wherein the weight content of polybutyleneterephthalate is from about 10% to about 70% and the weight content of polytetramethyleneoxide is from about 30% to about 90%.
20
6. A fiber, tape or film according to Claim 2 wherein the poly(ether ester) comprises polybutyleneterephthalate and repeat units of 3-methyltetrahydrofuran and tetrahydrofuran.
25
7. A fiber, tape or film according to Claim 1 wherein the olefinic thermoplastic, elastomeric polymer is a propylene polymer.
25
8. A fiber, tape or film according to Claim 7 wherein the crystallinity of the propylene polymer is from about 10% to about 40%.
30
9. A fiber, tape or film according to Claim 7 wherein the propylene polymer is ethylene/propylene copolymer.
30
10. A fiber, tape or film according to Claim 7 wherein the propylene polymer is propylene homopolymer.
35
11. A fiber, tape or film according to Claim 1 wherein the olefinic thermoplastic, elastomeric polymer is an ethylene/C₄₋₂₀ copolymer.
35
12. A fiber, tape or film according to Claim 1 which comprises the olefinic thermoplastic, elastomeric polymer in an amount of from about 3% to about 80% by weight.
35
13. A fiber, tape or film according to Claim 1 which is a fiber.
35
14. A fiber, tape or film according to Claim 1 which is a tape.
35
15. A fiber, tape or film according to Claim 1 which is a film.
35

16. A fiber comprising an axial core comprising a segmented thermoplastic, elastomeric polymer, and a sheath encasing the axial core that comprises an uncrosslinked olefinic thermoplastic, elastomeric polymer.

5 17. A fiber according to Claim 16 wherein the segmented thermoplastic, elastomeric polymer is selected from the group consisting of poly(ether ester), poly(ester ester), poly(ester amide), and poly(ether amide).

10 18. A fiber according to Claim 16 wherein the segmented thermoplastic, elastomeric polymer is poly(ether ester).

19. A fiber according to Claim 17 wherein the polyether ester comprises polybutyleneterephthalate and polytetramethyleneoxide.

15 20. A fiber according to Claim 19 wherein the weight content of polybutyleneterephthalate is from about 10% to about 70% and the weight content of polytetramethyleneoxide is from about 30% to about 90%.

21. A fiber according to Claim 17 wherein the polyether ester comprises polybutyleneterephthalate and repeat units of 3-methyl-tetrahydrofuran and tetrahydrofuran.

22. A fiber according to Claim 16 wherein the olefinic thermoplastic, elastomeric polymer is a propylene polymer.

20 23. A fiber according to Claim 22 wherein the crystallinity of the propylene polymer is from about 10% to about 40%.

24. A fiber according to Claim 22 wherein the propylene polymer is ethylene/propylene copolymer.

25 25. A fiber according to Claim 22 wherein the propylene polymer is propylene homopolymer.

26. A fiber according to Claim 16 wherein the olefinic thermoplastic, elastomeric polymer is an ethylene/C₄₋₂₀ copolymer.

30 27. A fiber according to Claim 16 which comprises the olefinic thermoplastic, elastomeric polymer in an amount of from about 3% to about 80% by weight.

28. A fiber comprising an axial core comprising an uncrosslinked olefinic thermoplastic, elastomeric polymer, and a sheath encasing the axial core that comprises a segmented thermoplastic, elastomeric polymer.

35 29. A fiber according to Claim 28 wherein the segmented thermoplastic, elastomeric polymer is selected from the group consisting of

poly(ether ester), poly(ester ester), poly(ester amide), and poly(ether amide).

30. A fiber according to Claim 28 wherein the segmented thermoplastic, elastomeric polymer is poly(ether ester).

5 31. A fiber according to Claim 29 wherein the poly(ether ester) comprises polybutyleneterephthalate and polytetramethyleneoxide.

32. A fiber according to Claim 31 wherein the weight content of polybutyleneterephthalate is from about 10% to about 70% and the weight content of polytetramethyleneoxide is from about 30% to about 90%.

10 33. A fiber according to Claim 29 wherein the poly(ether ester) comprises polybutyleneterephthalate and repeat units of 3-methyl-tetrahydrofuran and tetrahydrofuran.

34. A fiber according to Claim 28 wherein the olefinic thermoplastic, elastomeric polymer is a propylene polymer.

15 35. A fiber according to Claim 34 wherein the crystallinity of the propylene polymer is from about 10% to about 40%.

36. A fiber according to Claim 34 wherein the propylene polymer is ethylene/propylene copolymer.

37. A fiber according to Claim 34 wherein the propylene polymer is 20 propylene homopolymer.

38. A fiber according to Claim 28 wherein the olefinic thermoplastic, elastomeric polymer is an ethylene/C₄₋₂₀ copolymer.

39. A fiber according to Claim 28 which comprises the olefinic thermoplastic, elastomeric polymer in an amount of from about 3% to 25 about 80% by weight.

40. A process for producing a fiber, comprising (a) preparing a composition by dispersing an olefinic thermoplastic, elastomeric polymer in a matrix of a segmented thermoplastic, elastomeric polymer, and (b) melt-spinning a fiber from said composition.

30 41. A process for producing a fiber, comprising (a) preparing a fiber from an olefinic thermoplastic, elastomeric polymer, and (b) forming a sheath around the olefinic thermoplastic, elastomeric polymer fiber from a segmented thermoplastic elastomeric polymer.

42. A process for producing a fiber, comprising (a) preparing a fiber from a segmented thermoplastic, elastomeric polymer, and (b) forming a sheath around the segmented thermoplastic elastomeric polymer fiber from an olefinic thermoplastic, elastomeric polymer.

35 43. A yarn prepared from a fiber according to Claim 1, 16 or 28.

44. A fabric prepared from a fiber according to Claim 1, 16 or 28.
45. A garment prepared from a fiber according to Claim 1, 16 or 28.
46. In an article for human hygiene, a stretchable band prepared from a fiber according to Claim 1, 16 or 28.
- 5 47. A fiber, tape or film according to Claim 1 further comprising a surfactant or compatibilizer.
48. A fiber according to Claim 16 further comprising a surfactant or compatibilizer.
- 10 49. A fiber according to Claim 28 further comprising a surfactant or compatibilizer.